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MEMORANDUM FOR: Project Director

SUBJECT : Intercept of Before-Burnout Telemetry

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25X1 1. The problem was defined as best we ( ), knew it during our meeting on 12 August as follows:

a/. It was desired to obtain as much pre-burnout telemetry per firing as was practical.

b/. The frequencies of this telemetry were known we believe, probably less than four, certainly less than six frequencies - no search would be required.

c/. It was desirable to record with high accuracy up to about 5 mc. (television video frequencies) but that valuable information would be obtained (laboriously) at 60 kc. recording band width.

d/. It would be desired to do this job quickly, two months being the objective for equipping and getting into operation.

e/. It would be possible to predict the approximate time of the firing to be recorded.

It was concluded that the use of the Project's assets for this job is probably necessary, certainly necessary for a high probability of success and maximum intercept time before burnout because:

a/. The height of the platform will provide the maximum time before burn out of any existing platform.

b/. The antennas available on the platform are superior to any existing aircraft antennas for this purpose. Since the intercept will require state-of-art sensitivity, this is very important.

c/. The preamps available for this platform are the best available today - for the same reason as given in (b) above, this is very important.

2. After discussing several ways to accomplish the desired end, the above group makes three recommendations: First: A quick set-up that can be accomplished within a short time. All equipment for this

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recommendation exists needing only remounting and cabling. [redacted] has the details on this recommendation. A block diagram is attached.

3. The need for a broad-band recording (television video - 5 mc. or more) is considered important by the committee. The reasons are:

a/. More accurate telemetry data would be available;
b/. Detailed technical data would be available;
c/. Readout could be done much more easily than with 60 kc/sec. recordings.

4. In order to attain the value of broad band recording result today, we have a second recommendation. It is: Fly the project aircraft as outfitted in recommendation I, but at a lower altitude. The lower altitude plane (maybe the KC135) would carry accompanied by a second plane a large bulky Ampex, RCA or other broad band television video recorder available today and control the recording procedures. It is judged that this system could be set-up in a few months since the equipment exists but the installation is considerably more involved than in recommendation I. ~~However, this system has some serious problems~~ there are in its reliability factors.

5. A third recommendation is made for a longer range but very significant solution for this and similar problems both in and outside of ELINT. The Project Director explored the possibility of a miniaturized wide-band width (several mc.) recorder two years ago. It was then found that Eastman Kodak were ready to start an R&D effort to build a box 1/2 cu. ft. in volume, weighing less than 50 lb. that would record and store at a rate of at least one mc/sec. (perhaps 10 mc/sec.) one channel of data for ten hours. This with a dynamic range of 50 db would be an improvement over existing systems in weight and volume (and power requirements) of three orders of magnitude. In the last two years several researches have brought forth new recording schemes that promise to increase this result by at least one more order of magnitude. It is highly probable that ~~known today that~~ miniaturization of recorders can be carried out at least to a factor of 10^4 over existing systems. It is recommended that these new developments be explored (Ampex, Eastman, General Electric, and others) and a development contract be let to produce such an item which could be carried in the project aircraft. This same device could be used to fulfill many other recording requirements (NSA, Security, Commo, etc), wherever great amounts of information need to be recorded in a small space.

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